

19
FOR OFFICIAL USE.

REPORTS

TO THE

LOCAL GOVERNMENT BOARD

ON

PUBLIC HEALTH AND MEDICAL SUBJECTS.

(NEW SERIES No. 9.)

Dr. F. St. George Mivart's Report to the Local
Government Board on the General Sanitary
circumstances and administration of the
Borough of Blandford Forum.



LONDON:

PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE,
By DARLING & SON, LTD., 34-40, BACON STREET, E.

And to be purchased, either directly or through any Bookseller, from
WYMAN AND SONS, LTD., FETTER LANE, E.C.; or
OLIVER AND BOYD, TWEEDDALE COURT, EDINBURGH; or
E. PONSONBY, 116, GRAFTON STREET, DUBLIN.

1909.

Price Threepence.

Dr. F. St. George Mivart's Report to the Local Government Board on the General Sanitary circumstances and administration of the Borough of Blandford Forum.

ARTHUR NEWSHOLME,
Medical Officer,
June 9th, 1909.

This inspection was assigned to me by the Local Government Board in consequence of their attention having been directed by persistent local complaints, as well as by the reports of the medical officer of health, to the existence of insanitary conditions in the borough of Blandford.

The small but ancient borough of Blandford Forum, in the County of Dorset, and near its eastern boundary, is in the registration and sub-registration districts of Blandford. Together with Blandford Rural District it is comprised in the Blandford Union.

The borough area, only 145 acres in extent, is wholly surrounded by the Rural District of Blandford. The population at the 1901 census was 3,649, and is now thought to be increased slightly.

The town, compactly built on the side of a small hill, consists of two principal streets, Salisbury Street, and East Street, which converge upon a rather spacious market place near to the north bank of the River Stour, which skirts the town close to its southern extremity.

The height above Ordnance datum varies from 198 feet near the Workhouse to 116 feet near the eastern end of the market place. The lowest part of the town is liable to flooding occasionally. On the 5th and 6th March of the present year the river suddenly rose owing to rapid melting of snow, and the south side of East Street was partly flooded.

In appearance and situation the town is attractive. There are no special industries now carried on, but there are numerous prosperous business concerns of the kind generally found in considerable market towns. One of the largest wool markets in the West of England is held here annually in July.

GENERAL SANITARY CIRCUMSTANCES.

Save for a band of alluvial soil, the town is wholly situated upon Chalk, which in some places is close beneath the surface.

Roads.—There are, I am informed, three miles three furlongs of road in the area of the borough, half being main and half district road. They are curbed and channelled, and at the time of my visit were in good order.

Dwellings.—At the 1901 census the borough of Blandford contained 832 inhabited houses on its area of 145 acres, an average of 5·7 houses per acre. But as there is, in the eastern and

western parts of the borough, a good deal of land unbuilt upon, the number of houses per acre in the area built upon must be considerably greater.

Houses in the principal, and older, portion of the town are mostly built of red brick with tiled or slated roofs. Of the dwellings of the poor very few are without gutter spouting. But the down pipes are commonly cut short in order to secure a supply of soft water in convenient receptacles, neglect to provide which occasions a good deal of damage and dampness in many instances.

The most unsatisfactory dwellings are the old structures erected in small blocks in confined spaces, or in rows in courts and passages running off from a main street. Of such rows of houses many have no back outlet; many, too, have little space intervening between front door and windows and the walls of adjoining structures. In this small town there are upwards of 120 houses at present without any back outlet. One of the worst examples is in Davis's Yard. Here are three houses (one was empty) without back outlet, and only four feet clear space in front. Payne's Yard, White Cliff Mill Street, has twelve houses without back outlet. At Charles Street are eight houses without any back outlet. The back gutter spouting of this row was discharging a stream of water on the roof of an outbuilding of the house at the extremity of the row. A good many curtilages are paved or asphalted, but many are unpaved or paved roughly with cobbles or blocks, displaced and favouring the formation of puddles.

There are upwards of eighteen back-to-back houses. Several of these, moreover, are separated from neighbouring buildings by but little distance; this in one instance being no more than five feet.

Rents generally are high. For houses with one room downstairs and two rooms upstairs (only one having a fireplace) and but a few square feet of yard space, rents of 3*s.* and 3*s.* 6*d.* are obtained.

No houses of a kind suitable for the poorest labouring class, earning 15*s.* to 18*s.* per week, have been built of late years, and the difficulty of housing these persons is increasing. Suitable dwellings for them are scarce, especially for those with families of children, and they are consequently driven to the oldest and most miserable cottages in a state of dilapidation verging upon the condemnable. It is an unfortunate circumstance, upon which the medical officer of health has commented, that much property in the town belongs to small owners lacking the means necessary to carry out substantial repairs.

Cases of overcrowding are frequently met with among the poorest class, and though some degree of abatement can be secured, such abatement cannot be more than the temporary relief afforded by "sleeping out" a member of the overcrowded family in an adjoining house. The following were cases coming under my notice:—

House comprising "living-room" downstairs and two bedrooms (one with small fireplace) upstairs. Father, mother,

and two daughters (ages 14 and 12) sleep in front bedroom, 979 cubic feet, very small window, and chimney of fireplace blocked up. Four children (ages 15, 8, 7, and 5) sleep in bedroom, 735 cubic feet. No fireplace. Window (fixed) about 3 feet by 2 feet. Staircase rickety and steep. Rent of house 2s. 6d.

House comprising living-room downstairs and two bedrooms upstairs. Four children (ages 15, 13, 7, and 5) sleep in bedroom, 539 cubic feet. A small fireplace. Father and mother sleep in back bedroom, 315 cubic feet. Lean-to ceiling. No fireplace. Tiny window (fixed). Ceiling broken allowing cold to enter.

The back doors of these two houses open into a flagged curtilage 18 feet long by 4 feet 4 inches wide and closed by wall. At one end of the curtilage is a pail closet for the use of the two families. There is an open channel slop drain leading to a gully.

Human excrement was lying on the ground, and more had evidently been emptied down the gully.

In another instance a man and wife and seven children were living in a house containing one living-room and two bedrooms, the latter having respectively 600 and 780 cubic feet air space. Only one bedroom has a fireplace, and the house has no back outlet whatever.

Water Supply.—The borough possesses a public water supply from the mains of the Blandford Water Company, authorised by the Blandford Water Order, 1894, to supply water in the parishes of Blandford Forum, Bryanston, Blandford St. Mary, Langton-long-Blandford, Pimperne, Charlton Marshall, and Spettisbury.

The supply is derived from a well 37 feet deep sunk in the chalk about a mile from the town, and in the parish of Pimperne.

I was unable to see any plan of these works. Mr. J. W. Andrews, the recently-appointed secretary, has made search, but nothing in the shape of a plan has passed into his possession.

At the time of my visit the water in the well was 17 feet 6 inches deep. For about 2 feet 6 inches from the surface of the ground the well is lined with hard concrete, and for about 15 feet below this with iron casing. Below this it is said to be lined with cemented brick. There are several adits, from one of which, running S.E., the principal supply is said to be obtained. The adits have been altered and extended since the well was sunk. The well itself is about 112 feet south of the water-course known as Pimperne brook, in the direction of which the north-east adit travels. At the time of my visit in exceptionally wet weather the water-course was quite dry, and I am informed it is rarely otherwise.

There is a shaft lined with cemented brick above and dry brick below, 37 feet in depth leading to the S.E. adit. It is sunk in the entrance road of the works, and has on either side the garden of the engineer's house, and is closed by a man-hole cover flush with the surface of the soil.

The water is described as being very pure though hard. It is said to be analysed quarterly by Mr. R. H. Groves, of Blandford. From the Secretary of the Water Company I obtained a copy of an analysis made in 1907. This will be found in Appendix A, together with a copy of portion of a letter from Mr. Groves, wherein he gives the result of his most recent analysis of the water. The analytical reports do not appear to have been kept by the former Secretary of the Water Company.

I am informed that out of 832 houses 701 are supplied from the Company's mains. There are said to be some 63 pump wells and 15 dip wells in the borough. In no case was actual complaint made by anyone using water from them, though in one case it was admitted that occasionally slugs were brought up in the bucket.

In his annual reports the medical officer of health has from time to time referred to these wells as liable to dangerous contamination. In his report for 1905 he says that "many polluted wells are still in use." In his report for 1906 he says, "no inhabitant of the borough should of necessity be obliged to make use of any water derived from wells on the premises, all of which are so liable to contamination from the large number of privy vaults which formerly existed in the borough." Inasmuch as leaky privy pits are still found in the close vicinity of wells it is evident that the latter are exposed to great risk of dangerous contamination.

Sewerage.—There are no sewers properly so called. I am informed that along the principal streets and many of the lesser ones drains of various kinds have, in former times, been laid. Portions of these have in recent periods been taken up and re-laid. The more ancient are brick barrel drains, the more recent are 9 inch or 12 inch stoneware pipes. The depths at which the old drains are laid appears to vary from 1 foot to 6 feet beneath the surface. No plan of them exists, nor is there knowledge as to when they were laid. There is no provision for their ventilation. They are flushed once a week in winter and twice a week in summer by water discharged from a water-cart down the gullies. These drains are not intended to convey fæcal matter, and, although there is no certain knowledge, it is suspected that water closets are directly connected to them. But they carry slop liquids of all kinds from houses, and there is good reason to believe that some cesspools have overflow pipes to them. They also receive the drainage of back-yards, stables, and such like.

At the lower part of the town two large catch-pits have been provided in the course of these drains to intercept solid matter. The catch-pits are emptied monthly by the agency of the council. There are three outfalls, two of which discharge into a narrow subsidiary channel of the Stour. It can, by means of a pen-stock, be given a rapid flush of water. The third outfall drain discharges into the river just above the "Bathing Place."

When I visited these outfalls the river was fairly high, and little or no nuisance was apparent at any of the three outfalls. At two of them the water of the river was discoloured by the

outflow of thick muddy liquid from the drains, but there was no smell, and not much foul deposit was observable in the then condition of the river. It is asserted, however, that in dry summer weather the conditions are at times very offensive, especially at the western outfall which adjoins a main road. The surveyor assures me that the weed in the river is kept down by cutting every summer, and that every day the channel, into which two of the outfall drains discharge, is examined by one of the town council's men who sees that no obstruction has occurred to the flow.

An outfall so near to the bathing place cannot fail to be a source of danger.

Some houses have cesspools, the overflow pipes from which lead to coarse filtration chambers, the effluent discharging into the Stour. Other houses drain to cesspools without overflow, and these cesspools are emptied at infrequent intervals.

Five houses entirely unprovided with drainage were met with. In these cases slops are thrown upon a small garden or into the vault privy.

Of several rows of houses such as the "Rookery," "Payne's Yard, East Street," "Red Lion Yard, Market Place," and "Mount Pleasant, East Street," the house drains discharge into one foot open channels, down which the slop liquids pass to road drains or to cesspools.

It is not surprising to find that with the maze of odd lengths of drain pipe, conduit, channel, and what not, upon no clearly understood plan, the blocking of drains is no rare occurrence.

Excrement Disposal.—This for the most part is effected by means of pail closets, a system which has been introduced by the persistent efforts of the medical officer of health, and is being steadily extended. During the year ending December 31st, 1908, the pail system has been adopted in 76 houses, while 47 vaults have been abolished. I am informed that there are about 550 pail closets in the borough.

There are also said to be 158 vault privies and 159 water-closets draining to cesspools.

The closet-pails are said to be emptied once a week by a contractor, who is paid at the rate of £52 per annum. Each full pail is removed and cleansed, being replaced by an empty one containing a little carbolic powder. It is intended that earth should be used in these pails to cover dejecta, and in newer houses a trough or receptacle for earth is usually found, but such receptacle was commonly seen empty. Certainly in few pails inspected and in hardly any of those belonging to poorer dwellings is any earth used. To those who ask for it fine sifted ashes mixed with earth are supplied gratuitously from a cart belonging to the town council, which for this purpose perambulates the town every Saturday morning. Apparently 66 houses were, at the time of my visit, being supplied with earth in this way. Other households were said to provide for their own needs. A store of ashes is kept at the corporation store-yard, where it is sifted and mixed with earth. But suitable earth is difficult to obtain; the mixture seen by me seemed

unsuitable for its purpose as containing too much ash. In many small houses it is difficult or even impossible to find a place for storing earth for closet pails. The removal and emptying of closet pails is apparently carried out regularly, and I heard no complaint as to it. The pails are placed in a covered van and taken away to Coward's Farm about three-quarters of a mile from the town, where they are emptied and cleansed. Wherever possible, pails are carried out through back entrances or side passages, but I found that in 26 houses, two of these being the property of the corporation, the pails have actually to be carried from the back through the dwelling. In some instances these closet pails are placed in very unsuitable positions, such as un-ventilated cupboards inside sheds, or in other dark corners. For weekly pail removal the corporation make a charge of 5s. per annum per pail, which is levied upon landlords and not upon occupiers paying a rental of less than £20 per annum. Payment is due at Midsummer, and is collected by the surveyor. Question has been raised as to the legality of this charge, having regard to Section 43 of the Public Health Act (1875). Two occupiers have refused—one indeed for nearly five years past—to pay the charge. Though their accounts are outstanding, their closet pails are still collected and returned as usual.

Of the numerous vault privies seen by me all are objectionable. In many instances the privy structure is much, and occasionally dangerously, dilapidated, and usually privies are dark and insufficiently ventilated. Generally pits are directly beneath privy floors. Privy-pits are, I am informed, rarely cemented, being in most cases dry-bricked or even mere holes in the chalk, the sides decayed or even falling in.

In this closely-built town privy-pits are frequently found in unpleasant proximity to dwellings, and in several instances the contents when emptied must be carried through the dwelling to the street. Emptying of privy vaults is carried out at owners' cost at varying intervals. Some appear not to have been emptied for years.

Cesspools seem to need even less frequent emptying, whether owing to their having overflows to road drains or to their contents soaking into the ground.

Refuse Disposal.—Refuse is removed on four days in each week by the corporation. Receptacles, which are often of an improper kind, are placed in readiness by the householder, and the contents are removed. No charge is made, even trade refuse being removed gratuitously.

The general opinion appears to be that the duty is well carried out. Some of the refuse is conveyed to Coward's Farm, above referred to, but it is mostly carried to St. Leonard's Farm, about a quarter of a mile from the town.

I found, however, that a good many open ashpits exist, and these are receiving the attention of the inspector of nuisances.

There is one *Common Lodging House*,* which, when I visited

* *Note.*—This house apparently is not registered.

it, was fairly clean and in decent order. It would be better that, in accordance with Section 24 of their Bye-laws, the town council should issue a placard stating the description or number of the room to which such placard shall apply and the maximum number of lodgers to be received at one time in such room, and cause this placard to be exhibited in each room.

There are three *Slaughter Houses*, which at my visit I found fairly clean and well kept.

There are five *Milk-shops* in the town. In four of these there is no proper accommodation for storing the milk. In one instance, indeed, I found a can of milk for sale standing uncovered upon the filthy floor of a poultry dealer's shop. The shop door was open, as was also that of the house, and the milk was receiving a liberal admixture of dust, particles of feathers, etc. blown into it.

There are two *Cow-houses*, but only from one of them, and that containing but two or three cows, is milk taken for sale. The cows are milked in the corner of a rough cart-shed, the standing place being raised above the ground upon wooden "sleepers." The only drainage is by means of a channel roughly formed to carry liquid filth to a small open tank in a corner of the shed.* At my visit the tank was full, but it is said to be emptied twice a week. I witnessed the entrance of the cows. Milking was begun without preliminary hand-washing, for which no means are provided. There was no udder cleaning.

There are eight *Bakehouses*. Three of these are well fitted and kept; the others were in very fair condition.

Two *Offensive Trades*, viz., that of tallow-melting and that of fellmongering, are carried on in the town, and appear to be unregistered. I heard strong complaint of the nuisance caused by the stench created during the process of tallow-melting. I was assured that the owner's present intention is to remove this business altogether at the expiration of his lease on the 24th inst.

The fellmonger's premises extend down to the channel of the river Stour.

These premises are liable to flooding on occasions, and were completely flooded just before my visit. Consequently when I saw it the place was in some confusion. The question as to the danger of filth being carried into wells or, indeed, into dwelling houses from these premises during floods is one that should receive consideration.

No complaint was made to me of foul smells in connection with this business, nor was there any such perceptible on the occasions upon which I visited Blandford.

GENERAL SANITARY ADMINISTRATION.

The town council consists of 16 members, and meet fortnightly.

* *Note.*—It appears that the matter was brought before the Nuisance Removal Committee on 13th March, 1907, as being a contravention of the Bye-laws.

The rateable value of the borough is £14,613, and its assessable value £13,161. There is no outstanding public debt. The general district rate for the past year was 1s. 11d. in the pound, and of this 1½d. was allotted for sanitary purposes. A 1d. rate produces about £50.

The following Bye-laws are in force:—

- | | |
|---|---|
| “With respect to Common Lodging Houses.” | } Allowed by the Local Government Board, 22nd December, 1892. |
| “With respect to Slaughter Houses.” | |
| “With respect to Nuisances.” | |
| “New Streets and Building.”—Allowed by Local Government Board, 22nd May, 1893. | |
| “The Cleansing of Footways and Pavements.”—Allowed by Local Government Board, 5th December, 1894. | |
| “A Market.”—Allowed by Local Government Board, 11th July, 1904. | |
| “Buildings.”—Allowed by Local Government Board, 12th April, 1907. | |
| “An Open Bathing Place.”—Allowed by Local Government Board, 24th August, 1908. | |

There are also Bye-laws “For the good rule and government of the Borough of Blandford Forum and for the prevention of nuisances,” made in pursuance of the Municipal Corporations Act, 1892, on 17th May, 1904, and sent to the Secretary of State for the Home Department on the 8th July, 1904.

The following voluntary Acts have been adopted:—

- The Infectious Disease (Prevention) Act, 1890, adopted 21st April, 1891.
- Part 3, Public Health Acts Amendment Act, 1891, adopted 21st August, 1894.
- The Baths and Wash-houses Acts, 1846 to 1899, adopted 17th September, 1901.
- Private Streets Works Act, adopted 1st July, 1899.

The *medical officer of health* is Mr. G. W. Daniell, M.R.C.S. (Eng.), and L.S.A., 1856, J.P. for the county of Dorset, who receives an annual salary of £30, half repaid from county funds. He was appointed in February, 1865. He also holds, at a salary of £80, the appointment of medical officer of health for Blandford Rural District. He is engaged in private practice. He has an intimate knowledge of his district, and he has done good service in it. In his annual reports he has expressed himself in plain terms with regard to the absence of any system of sewerage in Blandford, and the danger of the existing privy pits, as well as of the persistent use of water from wells in the vicinity of them.

The *inspector of nuisances* is Mr. Joe Barnes, who was appointed in January, 1904, and receives a salary of £60, half repaid from county funds. He is also surveyor and building inspector at an annual salary of £20. Previous to his appointment he

was for seven years clerk and then chief assistant to the surveyor and inspector of nuisances at Glossop. Subsequently he was for 12 months building inspector and principal assistant to the chief engineer at Kendal, and thereafter for two years inspector of nuisances in that borough. Mr. Barnes is an able and industrious officer. He keeps a complaint book and also a report book. His private note-books show that he has carried out a survey amounting to a house-to-house visitation of the borough. It is desirable that the results should be recorded in some more lasting and convenient form. This Mr. Barnes has promised to do.

The Rural District Council and the Town Council of Blandford have in the parish of Pimperne, about one mile from the borough, a small isolation hospital, erected by the generosity of Lord Portman upon land belonging to himself. The hospital enclosure has direct access from a good district road, and the site, though small, is an excellent one.

There is one ward block only, containing under one roof 14 beds* in four wards for the reception of all cases. The block somewhat resembles the Board's Model B of their 1895 "Memorandum" (which is now superseded), save that on the north side an enclosed verandah has been carried nearly the whole length of the building, with the result that the wards are placed in communication on one side, and owing to the consequent risk of cross-infection the building is rendered unsuitable for the reception of cases of more than one disease. There is a small administrative block; also a laundry block comprising wash-house, a Thresh's small disinfecter, with separate rooms for infected and disinfected articles, and an ambulance house.

The ambulance is an iron-tyred disused brougham. I am informed that it is disinfected at the hospital, but owing to insufficient volume of water supply it has to be washed at an inn yard in the town.

There is a resident matron, but nurses are obtained from London as required.

Water supply is obtained from the main of the Blandford Water Company. Water-closets are in use, and are drained to a ventilated cesspool in the farthest corner of the enclosure, which is surrounded by a 6 feet 6 inches corrugated iron fence. The enclosure is small, but more land would probably be granted if applied for.

The hospital cost £1,512 10s., and is leased by Lord Portman to the Blandford Rural District Council for the sum of £37 per annum. The Town Council of Blandford also have the use of it, paying two-fifths of the establishment charges, and defraying the cost of maintenance of their cases. But they also receive two-fifths of any profits derived from the reception of "outside" cases.

* *Note.*—This hospital was, I am informed, originally erected to contain eight beds, viz. :—three beds in each large ward (24 feet by 18 feet by 13 feet) and one bed in each small ward (12 feet by 18 feet by 13 feet). These now contain respectively five and two beds each, and have, I am told, in times of stress, held more.

Cases from other districts are also received on payments varying from 5s. to 7s. 6d. per day. At the time of my visit three cases of diphtheria from Shaftesbury Rural District and a case of scarlatina from Wimborne Rural District were convalescing in the hospital.

The disinfectant of the hospital is used for the clothing, &c., of patients received in the institution. Home disinfection is carried out by the inspector of nuisances by means of formalin. Bedding is hung up and exposed to the action of the gas, and is also sprayed with a formalin spray. Stripping of wall papers seems rarely to be secured, but lime-whitening of walls and ceilings is pressed for, and mostly obtained.

As will have been seen, the principal insanitary conditions of the borough are in connection with excrement disposal. The privy pits of the town, although less numerous than formerly, still constitute a grave and widespread nuisance. The introduction of the closet pail system, with corresponding reduction in the number of privy pits, has been a great advance, and for this the inhabitants must thank the persistent efforts of the medical officer of health and the inspector of nuisances. But without the sufficient use of suitable earth even these closet pails may be a source of nuisance. Moreover, in a close built town such as this no collection of closet pails can replace a proper system of sewerage, the want of which is a hindrance to building.

The old road drains acting as sewers are insufficient even for such portions of the borough as possess this resource.

I believe that the inhabitants of Blandford are aware that the provision of a system of sewerage ought to be taken into consideration, but from dread of the expense the general wish is to postpone the question. It is most desirable, however, in the interest of the town that this matter should be dealt with without delay.

All wells that are exposed to risk of dangerous pollution should be closed.

I recommend, also, that attention be given to the isolation hospital. The present accommodation, even if the verandah be so altered as to permit of the reception of cases of more than one disease with safety, is hardly sufficient even for the needs of the borough and the Blandford Rural District. It is quite inadequate to the wants of the Shaftesbury and the Wimborne Rural Districts as well. If cases from the latter districts are in future to be admitted to this hospital, an extension of the site should be obtained and the accommodation should be increased. A scheme of this sort might, indeed, be carried out with advantage by these four districts in combination. A proper ambulance should be procured, and an increased water supply, which is necessary for other purposes, would enable this vehicle to be washed as well as disinfected at the hospital.

In conclusion, it is a great pleasure to express the cordial thanks I owe to Mr. E. C. Castleman-Smith, the town clerk; to Mr. Daniell, the medical officer of health; and in a special manner to Mr. Joe Barnes, surveyor and inspector of nuisances,

for their courteous and willing help. To Mr. J. W. Andrews, secretary of the Blandford Water Company, I am indebted for information readily given and for permission to visit the Water-works. I have also to thank Alderman Ball, chairman of the Nuisance Removal Committee, and Councillor Norman for their assistance.

F. ST. GEORGE MIVART.

APPENDIX A.

September 19th, 1907.

The Secretary, Blandford Water Company.

DEAR SIR,—

I have this day made an analysis of the Company's water, and find it fully maintains its character for purity. The chief analytical data are:—

Solids	...	...	20 gr. per gal.
Chlorine	...	...	1·2 „ „
Free ammonia	...	...	Absent.
Albuminoid	...	...	·02 part per mil.

Yours,

R. H. GROVES.

APPENDIX B.

15th February, 1909.

Dr. F. St. George Mivart.

DEAR SIR,—

In reply to your inquiry, I have pleasure in stating that I have analysed the water taken from the mains of the Blandford Water Company four times a year ever since the formation of the Company, and it has always proved of first-rate quality, as one would expect from the position of the well and the fact that high pressure is always on, rendering it impossible for any contamination to take place in the event of a fracture or faulty joint. The following are the analytical data of an analysis made on February 11th, 1909:—

Total dissolved solids	...	20 gr. per gal.
Chlorine	...	1·2 „ „
Free ammonia	...	·00 part per mil.
Albuminoid	...	·02 „ „
Lead and copper	...	Absent.

* * * * *

Yours faithfully,

RICHARD H. GROVES.

